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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,675

06/05/2006

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EXAMINER

NGUYEN, KHANH TUAN

ART UNIT

PAPER NUMBER

1796

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,675	<b>Applicant(s)</b> IINO ET AL.	
	<b>Examiner</b> KHANH T. NGUYEN	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on RCE filed on 09/23/2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, and 4-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/23/2008 has been entered.

### ***Response to Amendment***

2. The amendment filed on 09/23/2008 is entered and acknowledged by the Examiner. Claims 1, 2 and 4-16 are currently pending in the instant application. Claim 3 has been canceled.

3. The rejection of claims 1, 2, 4-8 and 12-16 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hashiguchi et al. (U.S. Pub. 2002/0180088 A1) is withdrawn in light of Applicant's amendment and/or remark. The rejections of claims 9-11 under 35 U.S.C. 103(a) as being unpatentable over

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Hashiguchi et al. (U.S. Pub. 2002/0180088 A1) in view of Noguchi et al. (U.S. Pub. 2003/0191228 A1) is withdrawn in light of Applicant's amendment and/or remark.

***Claim Rejections - 35 USC § 102/103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 2, 4, 5, 7, 8, 10, and 12-16 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Pub. 2004/0058214 A1 (hereinafter Mehler).

With respect to claims 1, 2, 8, and 10, Mehler teaches a bipolar plate for PEM fuel cells made of at least two mutually non-miscible polymer, i.e. two-component polymer system, that are blended together to form a co-continuous structure wherein the blend polymers form largely separate phases during mixing operation and do not dissolve in one another or do not mix with one another [0033-0034 and 0041]. Mehler also teaches the non-miscible polymer blend may have particles of one blend polymer being dispersed in the other blend polymer as a continuous phase wherein the domain size is at least 0.5 micron [0034]. Mehler teaches the blend polymer may include polyamide, polybutyleneterephthalate, polyoxymethylene, polysulfone, polyether sulfone, polyether, polyphenylene oxide, polyether ketone, polypropylene, polyester, and ethylene-propylene copolymers. Mehler further teaches a carbon filler may be incorporated in one of the blend polymers or in the phase between the blend polymers

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or wherein a blend polymer to form a continuously conductive matrix [0033]. Mehler teaches the carbon filler is selected from conductive black, graphite, carbon fiber, carbon nanotubes or mixture thereof [0035]. The non-miscible polymer blend of Mehler is readable on the claimed multi-component polymer-type resin binder (A) and the carbon filler of Mehler is readable on the claimed electroconductive material (B). Mehler teaches the total amount of carbon filler may be incorporated at an amount up to 70 wt % based on the total weight of the filler polymer blend [0054] and 25-95 wt % of filled polymer [0047].

The reference specifically or inherently meets each of the claimed limitations in their broadest interpretations. The reference is anticipatory.

Claims 12-16 recited the phases "obtained by" which are considered a product-by-process claims and are not limited to the manipulations of the recited steps, only the structure limited by the steps. Therefore, the patentability of the product does not depend on its method of production (i.e. molding and electroconductive resin composition) and the claimed steps were not given patentable weight. Any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

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In the alternative that the above disclosure is insufficient to anticipate the above listed claims, it would have nonetheless been obvious to the skilled artisan to produce the claimed electroconductive resin composition, any minor modification necessary to meet the claimed limitations, such as *obtaining an electroconductive molded product by molding an electroconductive resin composition* would have been within the purview of the skilled artisan.

Regarding claims 4, 5 and 7, Mehler discloses a bipolar plate comprising of polyvinylidene fluoride and silicone elastomer [0030], as recited in claims 4 and 7. Mehler teaches a polyamide to polyether sulfone mix ratio of 1:8 to 8:1[0049]. Although Mehler does not explicitly disclose the non-miscible polymer blend (component A) comprises of 1-99 wt % of a thermoplastic resin and 1-99 wt % of an elastomer as recited in claim 5, nonetheless it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the composition of Mehler by blending a thermoplastic resin and silicone elastomer as suggested by Mehler at a weight ratio of 1:8 to 8:1 as taught by Mehler.

6. Claims 1, 4-8, and 12-16 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S Pat. 6,331,586 B1 (hereinafter Thielen).

Thielen teaches a conductive polymer composition comprising of (a) at least two polymers that are partially immiscible with each other and are present in proportions

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such that each polymer forms a respective continuous phase and the two phases are co-continuous with each other in the polymer blend; and (b) at least one conductive material in particulate or fiber form in one of the said co-continuous polymer phases or at a continuous interface between said co-continuous polymer phases (Abstract). At Fig. 3 and Col. 7 lines 19-34, Thielen teaches the (a) conductive co-continuous polymer blend having an island in the sea morphology. Thielen specifically teaches the said (a) co-continuous polymer phases may be a blend of thermoplastic such as polystyrene (PS) polypropylene (PP) or fluoropolymer (i.e. polyvinylidene fluoride) and rubber elastomer such as EPR, EPDM, polybutadiene, and polyisoprene (Col. 2, lines 33 and 36; Col. 6, lines 17-34; Col. 7, lines 50-60). In one embodiment, Thielen teaches a 50/50 blend of PP resin and EPR rubber (Examples 1 and 2). Thielen further teaches the (b) conductive material being selected from carbonaceous material, conductive metal powder or organic semiconductive powders (Col. 4, lines 8-67).

The reference specifically or inherently meets each of the claimed limitations in their broadest interpretations. The reference is anticipatory.

Claims 12-16 recited the phases "obtained by" which are considered a product-by-process claims and are not limited to the manipulations of the recited steps, only the structure limited by the steps. Therefore, the patentability of the product does not depend on its method of production (i.e. molding and electroconductive resin composition) and the claimed steps were not given patentable weight. Any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner

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has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

In the alternative that the above disclosure is insufficient to anticipate the above listed claims, it would have nonetheless been obvious to the skilled artisan to produce the claimed electroconductive resin composition, any minor modification necessary to meet the claimed limitations, such as *obtaining an electroconductive molded product by molding an electroconductive resin composition* would have been within the purview of the skilled artisan.

### ***Claim Rejections - 35 USC § 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 6, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. 2004/0058214 A1 (Mehler) as applied to the above claims, and further in view of U.S. Pub. 2003/0191228 A1 (hereinafter Noguchi).

Naito is relied upon as set forth above. With respect to instant claims, Mehler discloses a bipolar plate comprising of polyvinylidene fluoride and silicone elastomer [0030]. Mehler does not disclose the component (A) comprises a composition of a



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polyolefin, and one or plural kinds selected from: hydrogenated styrene-butadiene rubber, styrene-ethylene-butylene-styrene block copolymer, styrene-ethylene-propylene-styrene block copolymer, crystalline olefin-ethylene butylene crystalline olefin block copolymer, styrene-ethylene-butylene-crystalline olefin block copolymer, styrene-iso-styrene block copolymer, styrene-butadiene-styrene block copolymer.

However, Noguchi discloses a conductive curable resin composition comprising of (A) a curable resin composition containing a blend of elastomer (A1) and thermoplastic radical reactive resin (A2) ([0013] and [0043-0049]). Noguchi discloses the elastomer (A1) such as the claimed polyolefin [0040] as recited in claim 6 in order to provide excellent conductivity and superior heat release properties [0013]. Noguchi further discloses the conductive curable resin composition comprising a (B) carbon material (e.g. graphite powder, carbon fiber, VGCF, CNT and a mixture thereof) may be used alone or it may be added with boron in an amount of 0.05-10 % weight and VGCF or CNT in the admixture to improve the conductivity of the carbon material [0083-0084] as recited in claims 6 and 11.

Mehler and Noguchi references are combined because both references teach an analogous art of electroconductive resin composition for fuel cell comprising of carbonaceous powder dispersed in a blend of resin binder matrix. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the conductive resin composition of Mehler by substituting a silicone elastomer for the claimed elastomer in order to provide excellent conductivity and superior heat release properties as suggested by Noguchi.

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Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the conductive resin composition of Mehler by adding a boron to the carbonaceous powder in the range of 0.05-10 % weight and admixed with VGCF or CNT as taught by Noguchi in order to improve the conductivity of the carbon material.

9. In view of the foregoing, the above claims have failed to patentably distinguish over the applied art.

### ***Response to Arguments***

10. Applicant's arguments with respect to claims 1, 2 and 4-16 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH T. NGUYEN whose telephone number is (571)272-8082. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Kopec/  
Primary Examiner, Art Unit 1796

/KTN/  
10/27/2008